

REMARKS

Claims 7, 34, and 61 are amended. Claims 110-112 are newly added. Hence, Claims 7-12, 14-39, 41-66, 68-87, and 110-112 are pending in this application. .

REJECTION OF CLAIMS 7-87 UNDER 35 U.S.C. § 102(e)

Claims 7-12, 14-39, 41-66 and 68-87 are rejected under 35 U.S.C. § 102(e) as being anticipated by *Linden*, U.S. Patent No. 6,266,649. It is respectfully submitted that Claims 7-12, 14-39, 41-66 and 68-87 are patentable over *Linden* for at least the reasons provided hereinafter.

CLAIM 7

Claim 7 recites:

A machine-implemented method for estimating how a particular user would rate a particular item, from a plurality of items, that the particular user has not yet rated, the method comprising the machine-implemented steps of:
identifying one or more items from the plurality of items that have ratings similar to ratings of the particular item;
identifying one or more other users that have given ratings to the one or more items that are substantially similar to ratings given by the particular user to the one or more items; and
generating an estimation of how the particular user would rate the particular item based upon ratings for the particular item given by the one or more other users.

What Claim 7 is Directed To

Claim 7 is directed to a method for estimating how a particular user would rate a particular item, where the particular item has not yet been rated by the particular user. In other words, Claim 7 is directed to generating an estimated rating for an unrated item (the particular item is unrated by the particular user, though it may have been rated by users other than the particular user).

Claim 7's Three-Step Process

Claim 7 recites a three-step process for generating the estimated rating for the particular item. The first step is “identifying one or more items from the plurality of items that have ratings similar to ratings of the particular item”. As just discussed above, the particular item has not yet been rated by the particular user, but it may very well have been rated by users other than the

particular user. Therefore, the particular item may already have some ratings. The first step in Claim 7 is to find other items which have ratings similar to the particular item's ratings. For example, if “the plurality of items” includes five movies (Movie #1 – 3 stars; Movie #2 – 3 stars; Movie #3 – 3 stars; Movie #4 – 2 stars; and Movie #5 – 5 stars), and “the particular item” is Movie #1, then Movie #2 and Movie #3 may be identified as the “one or more items from the plurality of items that have ratings similar to the particular item” because Movies #1, #2, and #3 all have ratings of 3 stars. In other words, the first step in Claim 7 filters the set of rated items (e.g., five movies) to obtain a subset of rated items (e.g., Movie #2 and Movie #3) that have ratings similar to the ratings of the particular item (e.g., Movie #1). Again, Movie #1 is not yet rated by the particular user.

The second step is “identifying one or more other users that have given ratings to the one or more items that are substantially similar to ratings given by the particular user to the one or more items”. In this step, the subset of rated items that was identified in the first step is further analyzed. First, the particular user's ratings of the subset of rated items are examined. Then, users who have ratings similar to the particular's user's ratings are found. Continuing with the example above, Movie #2 and Movie #3 have been identified as items which have ratings similar to the ratings of Movie #1 (“the particular item”). If the particular user has given Movie #2 a rating of 4 stars and Movie #3 a rating of 5 stars, then other users who have also given Movie #2 a rating of 4 stars and Movie #3 a rating of 5 stars may be identified as the “one or more other users that have given ratings to the one or more items that are substantially similar to ratings given by the particular user to the one or more items”. Suppose that there are three users who have also given Movie #2 a rating of 4 stars and Movie #3 a rating of 5 stars—User A, User B, and User C. These users would be identified in the second step of Claim 7. In other words, the second step in Claim 7 filters users to obtain a subset of users (e.g., Users A, B, and C) who have given ratings similar to the ratings given by the particular user with respect to the subset of rated items identified in the first step (e.g., Movie #2 and Movie #3).

Finally, the third step is “generating an estimation of how the particular user would rate the particular item based upon ratings for the particular item given by the one or more other users”. That is, the users who were identified in the second step are now examined for the ratings they gave to the particular item. Then, these ratings are used to generate an estimated rating for the particular item for the particular user, who has never actually rated the particular

item before. Continuing with the example above, if Users A, B, and C all gave Movie #1 a rating of 5 stars, then an estimated rating of Movie #1 by the particular user is generated based on these ratings of 5 stars given by Users A, B, and C for Movie #1. Thus, in the third and final step of Claim 7, the ratings given to the particular item by the subset of users identified in the second step are used to generate an estimate of how the particular user would rate the particular item.

Key Distinction Between Claim 7 and Linden

Two approaches for recommending items to a user are disclosed in *Linden*: the first is the “collaborative filtering” approach discussed in the “Background” section of *Linden* (*Linden* col. 1 ln. 42-56) and the second is the invention of *Linden*, summarized in the “Summary of the Disclosure” section (*Linden* col. 2 et seq.). However, neither of these approaches teaches or suggests the limitations of Claim 7 because while Claim 7 is directed to generating an estimated rating for an unrated item for a particular user, the *Linden* approaches are directed to recommending items for a particular user.

The fact that Claim 7 is directed to generated an estimated rating for a particular item and the *Linden* approaches are directed to generating a list of recommended item is a key distinction between Claim 7 and *Linden*. Because the *Linden* approaches are directed to recommending items, these approaches are not interested in any particular unrated item. Consequently, *Linden* cannot teach “identifying one or more items from the plurality of items that have ratings similar to the particular item” simply because no “particular item” is involved in generating recommendations.

Linden’s Approach #1 Does Not Teach Claim 7’s First Step

For example, the “collaborative filtering” approach discusses recommending items which were rated highly by users similar to a particular user to the particular user (*Linden* col. 1 ln. 42-56), but does not teach or suggest finding items which have similar ratings to a particular item. This is clear if we use the movie example from the discussion above, where the particular user has rated Movies #2, #3, #4, and #5, but has not yet rated Movie #1. According to the “collaborative filtering” approach, users who have given Movies #2, #3, #4, and #5 ratings similar to the ratings given by the particular user are identified. And then, if these similar users

have rated Movie #1 highly, then Movie #1 is recommended to the particular user. However, as discussed above, the first step in Claim 7 identifies Movies #2 and #3 as movies which are similar to Movie #1 (“the particular item”). No such identification is taught or suggested by the “collaborative filtering” approach. That is, the step recited in Claim 7 of identifying items that are rated similarly to an item that is yet to be rated by the particular user is completely missing from the “collaborative filtering” approach. Therefore, the “collaborative filtering” approach does not teach or suggest the first step recited in Claim 7: “identifying one or more items from the plurality of items that have ratings similar to the particular item”.

Linden’s Approach #2 Does Not Teach Claim 7’s First Step

The approach discussed in the Summary section of *Linden* is also directed to recommending items. Here, items which are “similar” to “items of known interest” to the particular user are recommended (*Linden* col. 2 ln. 54 to col. 3 ln. 3). Similarities between items are based on “correlations between the interests of users in particular items” (*Linden* col. 2 ln. 43-45). This approach, however, also does not teach or suggest finding items that have similar ratings to a particular unrated item. This is clear if we again use the movie example from the discussion above, where the particular user has purchased Movies #2, #3, #4, and #5, but has not yet rated or purchased Movie #1. According to the approach in *Linden*’s Summary section, Movies #2, #3, #4, and #5 are items of known interest to the particular user because they have been purchased by the particular user. Next, movies which are “similar” to Movies #2, #3, #4, and #5 are identified. This similarity may be based on other users’ purchase histories. For example, if a vast majority of users who have purchased Movies #2, #3, #4, and #5 also purchased Movie #1, then Movie #1 is considered to be “similar” to Movies #2, #3, #4, and #5. As a result, Movie #1 is recommended to the particular user. However, as discussed above, the first step in Claim 7 identifies Movies #2 and #3 as movies which have similar ratings as Movie #1 (“the particular item”). That is, Claim 7 recites a step of identifying items that are rated similarly to an item that is yet to be rated by the particular user. The approach in the Summary section of *Linden* is, however, directed to identifying items that are similar to items that are already known to be of

interest to the particular user. Therefore, the approach in the Summary section of *Linden* also does not teach or suggest “identifying one or more items from the plurality of items that have ratings similar to the particular item”.

Summary

Therefore, it is respectfully submitted that at least the limitation of “identifying one or more items from the plurality of items that have ratings similar to the particular item” in Claim 7 is not taught or suggested by *Linden*. Indeed, as discussed above, the performance of the second step recited in Claim 7 is based on the one or more items identified in the first step, and the performance of the third step recited in Claim 7 is based on the one or more users identified in the second step. Therefore, none of the steps recited in Claim 7 is taught or suggested by *Linden*, and Claim 7 is therefore patentable over *Linden*.

CLAIMS 8-12 AND 14-33

Claims 8-12 and 14-33 all depend from Claim 7 and include all of the limitations of Claim 7. It is therefore respectfully submitted that Claims 8-12 and 14-33 are patentable over *Linden* for at least the reasons set forth herein with respect to Claim 7. Furthermore, it is respectfully submitted that Claims 8-12 and 14-33 recite additional limitations that independently render them patentable over *Linden*.

CLAIMS 34-39 AND 41-60

Claims 34-39 and 41-60 recite limitations similar to Claims 7-12 and 14-33, except in the context of computer-readable media. It is therefore respectfully submitted that Claims 34-39 and 41-60 are patentable over *Linden* for at least the reasons set forth herein with respect to Claims 7-12 and 14-33.

CLAIMS 61-66 AND 68-87

Claims 61-66 and 68-87 recite limitations similar to Claims 7-12 and 14-33, except in the context of apparatuses. It is therefore respectfully submitted that Claims 61-66 and 68-87 are patentable over *Linden* for at least the reasons set forth herein with respect to Claims 7-12 and 14-33.

CLAIMS 110-112

Claims 110-112 depend from independent claims 7, 34, and 61, respectively, and are therefore patentable over *Linden* for at least the same reasons that Claims 7, 34, and 61 are patentable over *Linden*. In addition, Claims 110-112 also recite additional features that are not taught or suggested by *Linden*.

Claim 110 contains the feature of “wherein generating an estimation of how the particular user would rate the particular item based upon ratings for the particular item given by the one or more other users includes **determining a similarity between the ratings given by the one or more other users to the one or more items and the ratings given by the particular user to the one or more items**” (emphasis added). This feature is described in detail in the Specification (see paragraph [0087]). As disclosed in the Specification, “[t]he degree of similarity between the similar reference users and the particular user may vary based upon a variety of factors including, for example, the number of similar items that both the particular user and the similar reference users have rated and how the particular user and the similar reference user rated the similar items”. This degree of similarity, according to the method recited in Claim 110, forms a basis for the generation of the estimation of how the particular user would rate the particular item. This feature is not taught or suggested by *Linden*. As discussed above, *Linden* does not teach or suggest the generation of a rating estimation. Therefore, *Linden* also cannot teach how the rating estimation is generated. More specifically, *Linden* does not teach the generation of a rating estimation that includes “determining a similarity between the ratings given by the one or more other users to the one or more items and the ratings given by the particular user to the one or more items.”

Claims 111 and 112 recite limitations similar to 110, except in the contexts of computer-readable media and apparatuses. It is therefore respectfully submitted that Claims 110 and 112 are patentable over *Linden* for at least the reasons set forth herein with respect to Claim 110.

In view of the foregoing, it is respectfully submitted that Claims 7-12, 14-39, 41-66, 68-87, and 110-112 are patentable over *Linden*. Accordingly, reconsideration and withdrawal of the rejection of Claims 7-12, 14-39, 41-66, 68-87, and 110-112 under 35 U.S.C. § 102(c) as being anticipated by *Linden* is respectfully requested.

CONCLUSION

It is respectfully submitted that all of the pending claims are in condition for allowance and the issuance of a notice of allowance is respectfully requested. If there are any additional charges, please charge them to Deposit Account No. 50-1302.

The Examiner is invited to contact the undersigned by telephone if the Examiner believes that such contact would be helpful in furthering the prosecution of this application.

Respectfully submitted,

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